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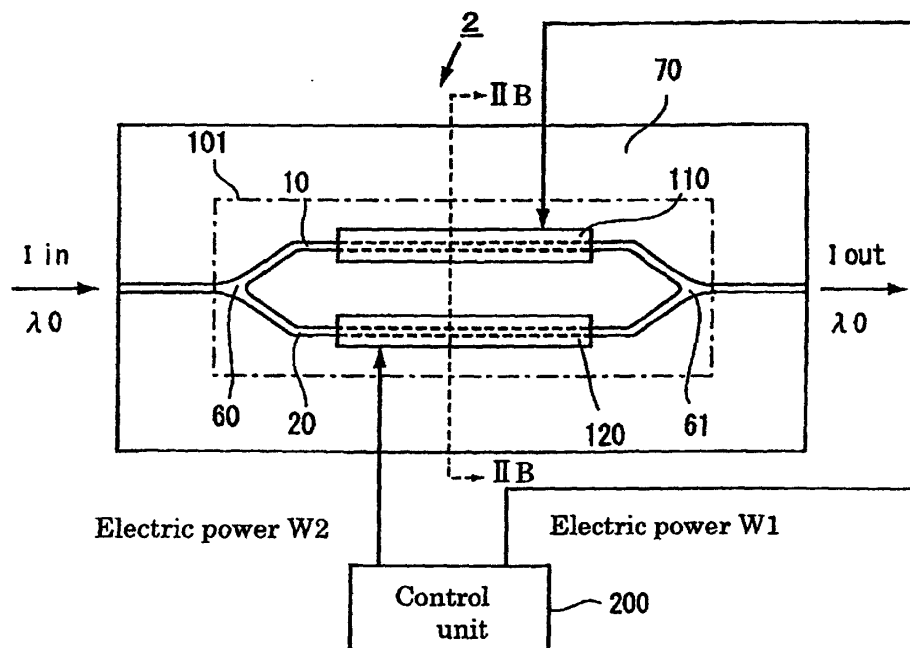
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(54) **Planar lightwave circuit type variable optical attenuator**

(57) The invention provides a planar lightwave circuit type variable optical attenuator in which a small (polarization dependent loss) PDL is maintained even when an attenuation is large. The variable optical attenuator is constituted by a Mach-Zehnder interferometer comprising a substrate, two optical waveguide arms (10,20)

buried in a clad (70) formed on the substrate (100), and thin-film heaters (110,120) disposed on the surface of the clad and adjusting optical lengths of the optical waveguide arms. The optical waveguide arms are each made of a silica-based glass material, and a difference ΔL_0 between arm lengths is set to be in the range of $0.38\mu\text{m}$ to $0.52\mu\text{m}$.

FIG. 2A





European Patent
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EUROPEAN SEARCH REPORT

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			G02F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 December 2004	Examiner Hauser, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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